



Exhibit shows typical honey samples from 45 states. Each dot on the map represents one honey sample analyzed.—USDA Photo by M. C. Audsley.

# A Survey of American Honeys

1587

Number seven in a series of ten articles  
on the different honeys of America.

## 7. Relation of Color to Composition <sup>1/</sup>

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<sup>1/</sup> This is one in a series of articles describing a large-scale study of the composition of honeys from over the United States. Complete data interpretation and conclusions will appear in a forthcoming Department of Agriculture publication.

GLEANINGS IN BEE CULTURE

**COLOR OF HONEY** is its most quickly noted characteristic, and it has long been used to form quick opinions of its other characteristics. Many believe that the strength (or desirability?) of flavor can be inferred from its color. It is known that some analytical characteristics of honey vary with its color. Schuette and his colleagues at Wisconsin found that the darker honeys are richer in ash, potassium, sodium, magnesium, iron, copper, manganese, chlorine and sulfur. They also found that enzyme contents of dark honeys are higher than of light honeys.

#### Honeys Grouped According to Color

In our recently concluded analytical survey of American honey, we grouped all honey samples into 13 color groups, representing the light and dark halves of the seven USDA color classes for honey. As was done for the granulation data, described in the preceding article in this series, code numbers from 0 to 12 were assigned to the groups, ranging from "0" for the light part of water white to "12" for dark. All analyses were then grouped and averaged, to give the average analysis for all honeys falling in each of the color groups. These averages were examined for trends and statistical analysis was used to find out if the trends that appeared to be present were actually significant.

#### Significant Differences Between Light and Dark Honeys

When this was done, many of the compositional factors were found to change in a regular way when darker honeys were studied. As we progress from light to darker groups of honey samples, the following factors decrease, i.e. they are higher in light than in dark honey (all are listed in order of decreasing significance<sup>2/</sup>):

<sup>2/</sup> All factors shown gave F values in the analysis of variance for regression exceeding the critical value for the 1% probability level.

Sucrose  
Lactone/Acid Ratio  
Dextrose  
Active Acidity  
Levulose  
Granulating Tendency

These composition factors were found to be higher in darker honeys than in lighter:

Total Acid  
Free Acid  
Nitrogen  
Ash  
Undetermined Material  
Maltose

This is further substantiation of the fact that darker honeys are richer in minerals (ash) than lighter ones. They are also much higher in total acidity, but are lower in dextrose and levulose and have a lessened tendency to granulate.

#### Color of Honey Over the United States

Recently an exhibit was made up showing typical honey samples arranged with a map of the United States. It could be seen that honey of the East and South was darker and that as one went westward, honey lightened considerably. This is not a new observation, but it is of interest that when all of our honey samples were classified by state of origin and further by area of the United States, this was again shown. This may be seen by the following values. Here the code numbers for color were averaged. Whether this procedure would give the same value for color as would be obtained by blending the samples is debatable, but we feel that it gives a good approximation.

Thus, honey from the East and South in general is darker than the national average while that from the north central and intermountain area is lighter.

(Next month: - Effect of storage on honey sugars.)

Area	No. of Samples	Average Color
North Atlantic States	82	Light half Ex. Light Amber
East North Central	47	Light half White
West North Central	63	Light half White
South Atlantic	86	Dark half Ex. Light Amber
South Central	68	Light half Ex. Light Amber
Intermountain West	52	Light half Extra White
West	104	Dark half White
All samples	502	Dark half White

MAY, 1961